Reduced Waste by Half
with Smart Weight Monitoring

The Swedish Company Sandvik manufacturers advanced products based on expensive tungsten carbide. In order to eliminate costly waste, the consumption of tungsten carbide needs to be precisely monitored and weighed. METTLER TOLEDO's dosing and counting solutions helped the company to optimize material flows and costs in production.

The Swedish Sandvik group plays an important role within numerous industrial sectors in regard to the production of various advanced products like hot rolling rollers, teeth for circular saws or gaskets. The group has different production sites and manages the entire set of processes from producing the raw materials to manufacturing the finished product. The Sandvik site in Epinouze, France, focuses with more than 100 employees on the following two activities: wearing parts production for the aeronautics, automotive, and agri-food industries as well as rotary knifes for markets associated with hygiene products.

Complex raw material handling

All the Sandvik products that are manufactured in Epinouze are based on tungsten carbide, a material with numerous mechanical properties and a price that has risen significantly over recent years. With several tons being consumed each week, managing the material itself along with the transformation of the material and any rejects is a mammoth task. "That's why weight monitoring has a role to play throughout the entire production process," explains Damien Gendron, Head of Production at the Sandvik Epinouze site.

Material control by weight

It all starts when the barrels of tungsten carbide powder arrive from the Sandvik powder production site in Grenoble, France. The barrels, which usually weigh 100 kg, are identified by bar codes and are then sorted by grade and according

METTLER TOLEDO

Inspection of the tungsten carbide barrels on arrival.

to batch number. An initial weight check is then performed. After that, the powder is sent to a mechanical or isostatic press. When the powder comes back, a second weight check is always carried out to determine the residual weight and monitor the exact quantity of powder used. The quantity of powder dispensed to the press is also measured by weight to ensure the correct amount. A brand new METTLER TOLEDO station has just been installed. "We have always had a METTLER TOLEDO terminal and this has now been in use for more than 25 years", explains Mr. Gendron. "Therefore, we decided to contact our regional commercial engineer at METTLER TOLEDO, Jérôme Jarrier, with a view to modernizing the existing installation," he adds.

Accurate dosing to the gram

Now an IND690form terminal that allows the powder to be dispensed in a feed hopper for small parts production has been introduced. "High-precision dispensing when the powder arrives at its destination is critical to avoid the problem of weight dispersion, particularly in the case of small parts. That's why I proposed an IND690form terminal with a 12 kg platform that is accurate to the gram," adds Jérôme Jarrier. The compression phase represents a crucial phase of the production process, as it involves a high level of industrial risk. By introducing a system for monitoring material consumption and production times, the reject rate has been halved in the space of two years. In addition to this installation, weighing also plays a role within the context of a robotic press. The press features an integrated WMS weigh module that enables highly precise and fast weighing of small parts that are moved by an articulated arm. If the weight is not within the set tolerance limits, all you have to do is readjust the quantity of material being used by the press.

Robotic press equipped with a WMS high speed precision weigh module.

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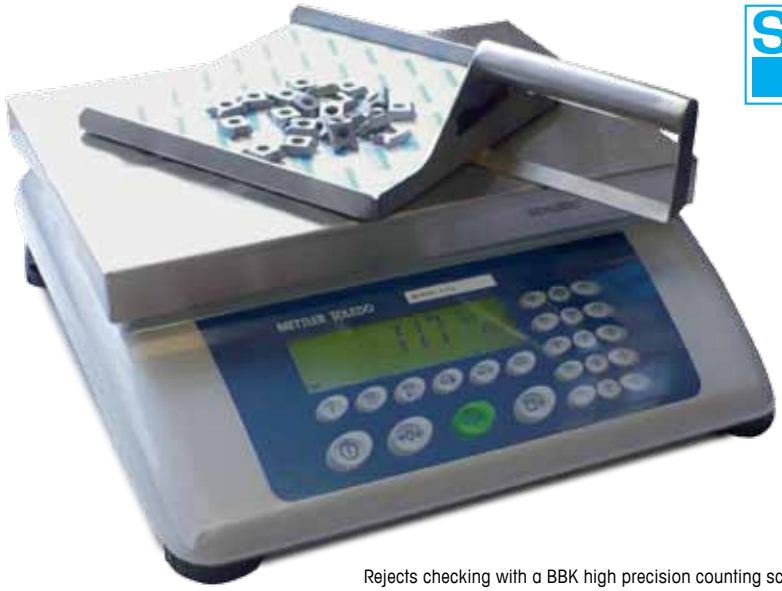


Rejects checking with a BBK high precision counting scale.

High performance thanks to monitoring rejects

Following compression, the tungsten carbide parts are then baked, which causes linear shrinkage of around 20 %. They then undergo surface machining with a diamond grinding wheel. There is now a dedicated weighing platform for monitoring rejects. In due course, this task will be handled by each operator. These operators will be able to determine the number of rejects thanks to METTLER TOLEDO counting scales that are located directly on the production lines. "The performance of our site depends on our ability to monitor production times and obtain a precise picture of the material quantities consumed. For us, weighing is absolutely crucial! That is why all the METTLER TOLEDO weighing equipment is subjected to an annual inspection by the local technician," concludes Damien Gendron.

Avoid Waste and Save Expensive Material Costs

Learn how smart counting solutions help you to avoid waste and optimize your material flow.

Register for the free "Best Practice in Piece Counting" webinar and profit from expert knowledge!

▸ **www.mt.com/us-counting-webinars**

Get your own free copy of the piece counting brochure and profit from industry know-how!

▸ **www.mt.com/ind-counting-brochure**

WMS High Precision Weigh Module

Easy to integrate due to very slim design and off-center position of load plate.
Available with and without internal calibration.

IP66

Capacity	120 g – 6200 g
Readability	0.0001 g to 0.01 g
Scale Material	Stainless steel
Load Plate Material	Aluminum, Chrome plated
Protection	IP54, IP66 with wash down feature
Interfaces	RS232, RS422 and Digital Input and Output. DeviceNet™, Profibus®, Profinet IO® and EtherNet/IP™ with accessory.
Power Supply	10 to 29V DC; < 4W in operation
Accessories	Fieldbus modules, DIN-rail connection modules for control cabinet, cables
Communication	Direct connection to PLC or control system

Accurate Weighing and Counting
from 1mg up to 300 Tons

Whether you are producing the smallest gears of a clock or products as large as an airplane, high quality production demands reliability and accuracy. "A chain is only as strong as its weakest link," therefore it is important to verify that all of the items that you manufacture are correct and complete every time. METTLER TOLEDO's weighing solutions help you to sort out improperly manufactured products, accurately count or verify end product quantities and efficiently determine weight for quality reasons. Benefit from accurate weighing and counting from 1mg up to 300 tons.

Tiny parts – accurately counted

Even the smallest pieces, such as gears in a watch, can be measured and counted exactly. These tiny pieces can barely be seen with your eye but can be counted exactly with high-performance X-Platforms. Used as a sample scale even parts with a 0.1mg weight are counted with high reliability. With capacities from 200 g or 400 g and a readability of 0.0001g, the X-Platform offers optimal weighing range and accuracy.

0.001 % deviation can make a difference in quality

In the production of parts for laptops even the smallest weight deviations of 0.001 % can indicate shaping errors, insufficient coating, incompleteness or a wrong density. In order to guarantee the quality of your products, wrong parts can automatically be rejected with the help of integrated, high-precision weigh modules. The weigh module capacities range from 120 g to 6100 g with a readability from 0.1 mg to 0.01 g.

High performance demands quality equipment

Golf balls, golf club parts and tees need to be counted and their quality must be verified during production so the player can perform well during the game. The BBK4 series of compact scales offer the unique high precision MonoBloc® technology which maximizes the accuracy of results. The capacity ranges from 0.61 kg up to 35.1 kg. The scales have a readability from 0.001 g up 0.1 g. These compact scales offer simple weighing, counting, filling and checkweighing applications all in one.

X204/X404: the Accurate Weighing Sensors 200 g/400 g x 0.0001 g

WMS High Precision Weigh Modules: 120 g x 0.0001 g – 6100 g x 0.01 g

BBK4 Series High Precision Compact Scale: 0.61 kg x 0.001 g – 35.1 kg x 0.1 g

Accuracy Achieved and Maintained

An out of specification scale can diminish quality, reduce profits and increase liability. Because each use and installation environment of a weighing system is unique, choosing the optimal scale in the very beginning, setting it up correctly and documenting its accuracy is crucial.

METTLER TOLEDO Service includes:

- Precise installation and set-up
- Equipment qualification
- Calibration according to Standards
- Preventative maintenance

Our global service organization delivers the following key benefits:

- Properly maintained equipment ensuring uptime and performance
- Simplified compliance with industry specific standards and regulations
- Clear and precise documentation to reduce the risk of non-compliance

www.mt.com/service

Continued good customer relationship

Precisely controlling the completeness of modules is key to maintaining quality. Shipping the right quantity of parts is critical to continue the good customer relationship within the broadly networked supply chain of the automotive industry. K line high-precision platforms offer a weighing range from 3-3000 kg and a wide variety of platform sizes and terminal options which can be tailored to meet individual application needs.

Fly and drive in comfort and safety

Weight compliance of vehicles such as a car or an airplane can be crucial to drive or fly in comfort and safety. METTLER TOLEDO provides weighing solutions for even the largest and heaviest products. For example, if you needed to weigh an entire airplane, METTLER TOLEDO could produce a custom solution using heavy duty weigh modules. Reliable load cells and weigh modules are available in various sizes, capacities and resolutions.

K-Line High Accuracy Bench and Floor Scales:
3 kg x 0.01 g – 3000 kg x 10 g

Reliable Weigh Modules and Load Cells:
110 kg – 300 t, up to 10 000d resolution
depending on model

Error-free Order Packaging
of Light and Heavy Components

Schneider Electric Alombard produces both very light weight products, as well as large, heavy electric components. When packaging orders, the challenge was to accurately count heavy and small components at the same time. To avoid missing parts or overfilling, METTLER TOLEDO suggested a reliable weighing system integrated into the conveyor system.

The France based company Alombard, established in 1929 in Saint Pryvé Saint Mesmin, has been part of the Schneider electric group for around a decade. Around 150 employees develop a whole host of electrical equipment: electrical connectors, flush-mounted boxes, and devices for the connection of luminaries, etc. The site is mainly responsible for supplying the group's logistics platform which supplies its French customers. Given that almost 1200 parts are produced per hour, product deliveries have to be very precisely controlled.

Prompt order fulfillment

"We wanted a solution that would improve our packaging station for bags of electrical components," explains Marc de Baudus, Methodology Engineer at Alombard. "We have to be able to put together orders that involve very small products, which in some cases weigh less than 1.4 grams, as well as much larger products where weight dispersion is a significant factor. Some bags were being sent back to us because a tiny connector was missing, a part without which the electrical unit could not be assembled properly," he adds.

Integrated weighing solution to avoid errors

Mr. de Baudus, who was already familiar with METTLER TOLEDO because of its counting scales, decided to contact his regional commercial engineer, Manuella Page, about the problem. "In view of the low weight of some electrical components, the solution had to be able to ensure an optimum level of precision. Naturally, I proposed a KA15s platform with a weighing capacity of 15 kg and 0.01g resolution combined with an IND690 weighing terminal," explains Manuella. "I also suggested that we add a barcode scanner to make it easier to identify the bags and improve the traceability of operations", she adds. The weighing system, which was perfectly integrated into a belt conveyor, has been providing operators with 100 % satisfaction for more than a year.

Thanks to this installation, only non-standard bags need to be checked manually and this results in higher levels of productivity. As a result, complaints about incomplete bag deliveries, have fallen dramatically.

The Alombard site produces all kinds of electrical components. Pictured here: flush-mounted boxes.

IND690 weighing terminal connected with KA15s (15 kg x 0.01 g) weighing platform under the conveyor belt.

Reliable detection of missing items from bags thanks to the, KA15s high precision weighing platform.

Calibrated
Trusted

It is common wisdom that any instrument and particularly a scale shall be calibrated before its first use. But is this sufficient? Shall I recalibrate my scale? How frequently? How? And why?

If you are working in a regulated industry, you may have asked yourself these questions a thousand times. You may have heard some of the usual answers. But do you really believe what you heard? Here is more information for a conscious user.

The benefits of calibration

When leaving the factory, a scale has been verified and adjusted for an immediate use in an optimal environment. However, it is impossible to anticipate the conditions in which the scale will operate. Think of a working environment with large temperature changes, wind draft, vibration from rotating equipment, etc. An initial calibration will document the effective performance of a scale within its effective operating environment. At that time a calibration certificate is issued. Sometimes, a Minimum Weight certificate is issued as well. This certificate will document for which weighing range (from minimum to maximum) the scale will deliver results in the accuracy corresponding to the tolerance required by your process and taking into account all the process risks. The calibration certificate and the Minimum Weight Certificate are two important quality documents that will preserve you from rejected lots, customer complaints or failed ISO audits.

Recalibration and verification

During operation, the scale will be exposed to dirt, rough operators and all sorts of disturbances that will affect its performance over time. So how will you know today that your production will meet all your quality standards? For this purpose you will perform a series of simple routine tests that will confirm you that the scale you are going to use will effectively perform to the level expected.

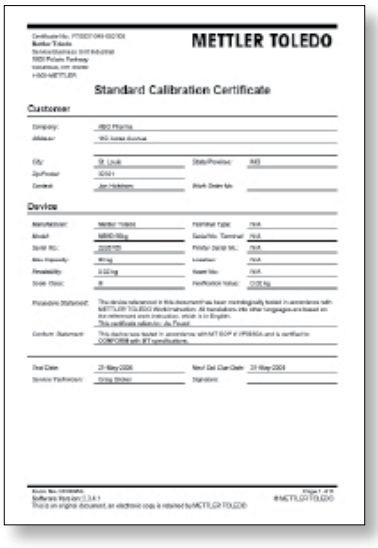
However, depending on the level of tolerance and risk of your process, you will need to recalibrate your scale at a regular basis. A trained technician will then verify that the scale fulfills its factory performance and proceed to any adjustment on an as need basis.

A combination of simple routine tests and regular recalibration will ensure that your daily production fulfills all your quality requirements.

For more information regarding the routine test and their frequency visit:

www.mt.com/gwp

and play the video on Good Weighing Practice™.


METTLER TOLEDO

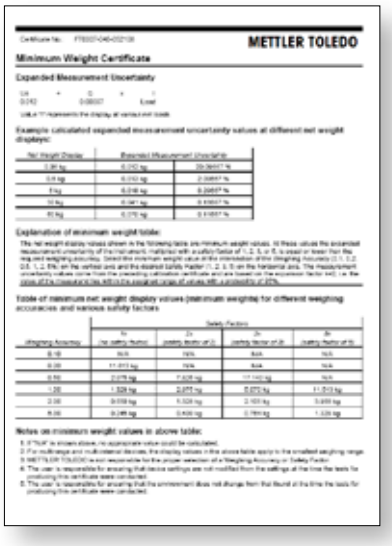
Standard Calibration Certificate

Customer

Device

For more information on calibration visit:

www.mt.com/ind-calibration


METTLER TOLEDO

Minimum Weight Certificate

Expanded Measurement Uncertainty

For more information on the Minimum Weight Certificate visit:

www.mt.com/minweigh

Smooth Goods Flow with
Smart Warehouse and Logistics Solutions

To ensure quality products, goods need to be checked before, during and after production. Errors can occur over the whole supply chain. Whether the raw materials you receive have deficiencies, or the deficiencies are created during production, any type of out-of-spec end product will decrease your productivity. Regular weight checks throughout production can help to minimize errors and improve production.

Fast Goods Receiving

Fast accurate weighing

Ensure that your suppliers are meeting all of your specifications. Using a floor or bench scale to verify incoming goods received, you can count or weigh your raw materials to verify inventory. No matter how big or heavy the incoming goods are, the right weighing systems can weigh almost everything in a split of a second. According to your needs and environment different compact scales, terminals and platforms can be combined.

▸ www.mt.com/compact-scales

▸ www.mt.com/bench-scales

Easy pallet weighing

Heavy loads can be quickly weighed with rugged METTLER TOLEDO floor, pallet or low-profile scales. Platforms are available in various designs and capacities up to 12 tons. For more comfort ramps can be added, mobile platforms are available and various terminals can be attached. Benefit from easy to use applications such as piece counting, accumulation of weights or counts, checkweighing or filling.

▸ www.mt.com/floor-scales

Smart piece counting

Counting scales determine the number of pieces in a box or container and allow reliable inventory checks in no time.

▸ www.mt.com/count

Shipping of Final Products

Correct order fulfillment

METTLER TOLEDO weighing solutions help to ensure that your customer orders are accurately filled with exactly the right number of pieces and products, on time and with the required labels and documentation.

Proper labeling according to your needs

Correct, industry standard labeling is important when shipping goods. METTLER TOLEDO provides tailored printing solutions meeting the demands and standards of your customers. Design your own custom printouts (e.g. with pictures, barcodes, customer logos) with the help of our system specialist.

▸ www.mt.com/industrial-printers

Efficient Warehousing

Fast and secure connectivity

In warehouse operations scales keep track of stock movement and assure flawless storage of goods. Article data can be stored in the scale's internal database or externally on a PC. Product article information (e.g. average piece weight, tare weight, …) can be easily called up with an integrated barcode scanner. The database can be imported from or exported to Excel. Various interface options such as Ethernet, RS232, Bluetooth, WLAN, Profibus DP or DeviceNet allow communication with other IT systems (e.g. SAP), warehouse systems or directly with a conveyor belt or alarm lamp.

Stock under control

Smart inventory scale solutions survey inventory level remotely. Integrated shelf scales transfer data to warehousing systems for efficient and transparent goods control.

▸ **www.mt.com/remote-inventory**

Reliable Packing Systems

Save time with automation

Parts required for assembly can be precisely counted or rapidly checkweighed for quality control. Semi-automated counting solutions ensure flawless packaging during production. Efficient counting at the end of a production machine requires a high degree of automation. Using digital I/O, METTLER TOLEDO scales can control conveyor belts, sound or light alarms and redirects material flows. Right parts fall automatically in a box or container, a light alarm goes off when the target count is reached informing staff to remove full containers.

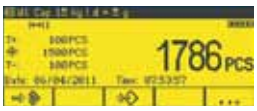
Reduce Eyestrain and
Speed up Production

Counting and checkweighing can be exhausting tasks as operators need to concentrate on working fast and weighing accurately. The new ICS series of compact weighing terminals is designed to improve operator productivity. Profit from a large, bright color display with colorWeight® functionality, user-friendly menus and various connectivity options.

The colorWeight® functionality causes the display to appear in different colors according your specifications. Green can be used to indicate that you are weighing within specification, while red indicates under filling and yellow overfilling. Or, you can specify which color you want to allocate to which status. The colorWeight® display technology reduces eyestrain as the human eye can respond to a color much faster than it can read and interpret a value on a screen. The terminals are equipped with freely definable softkeys providing quick access to the key functions, speeding up the working process.

ICS669 terminal with bargraph showing the actual filling status.

ICS449 terminal with full colored graphic display colorWeight®.



colorWeight®

Built for industrial environment

The ICS terminals are dust proof and built robustly for the use in harsh industrial environments. An integrated battery case makes the terminals mobile. The various interface options allow the connection of barcode scanners for fast article call up, printers for easy documentation and external keyboards for quick data entry.

Versatile product portfolio

The terminals are available with or without numeric keypad and big graphic TFT or LCD display. Select from a broad portfolio of weighing platforms from 3 kg x 0.01 g up to 12 000 kg floor scales.

www.mt.com/ics-scales

Save Resources with the New IND780batch Terminal

With rising raw material prices, reducing waste and eliminating mistakes becomes more and more essential. The IND780batch terminal saves resources by controlling your batching processes automatically or by guiding the user through manual processes.

Batch processing requires a control solution that manages not only recipes but also weighing scales, valves and order management. The new IND780batch terminal offers a solution for all these requirements and improves your processes.

Automatic control

The IND780batch terminal is very flexible and supports 999 material paths and 28 automatic material feeds. It can control automated processes, material feeders or valves making sure that the material flow is constant as well as other auxiliary equipment. Additionally the terminal provides conditional control tasks, go-to commands and timing functions.

Manual control

If your application does not include integrated automation, the IND780batch supports processes where an operator can add material manually. The IND780batch will guide the operator with instructions on the display through the manual batching process, eliminating human errors and costly re-work.

Specifications

Up to 1000 recipes can be stored in the terminal. The terminal then precisely controls the mixing process according to the stored recipes. Both vertical and horizontal applications can be managed.

The IND780batch does not need a PLC or DCS connection as it provides a fully integrated batch control solution itself. For easy article recall and when tracking and tracing matters a barcode scanner can be connected to the terminal. An included PC configuration tool allows easy management of batching data on the computer. It can be used for as many IND780batch terminals as you like.

www.mt.com/ind780batch

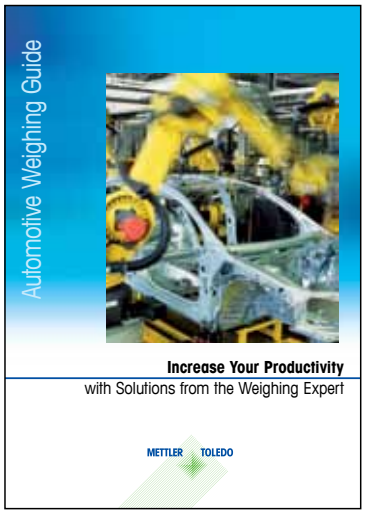
IND780batch Terminal.

Prepare Your Production Performance for a Race!

Race Car Drivers Aren't the Only Ones Who Focus on Speed…

To be productive and guarantee high quality products, your operation needs to be both fast and precise – like mechanics in a pit stop.

Discover smart weighing applications used in manufacturing automotive parts and increase your production performance.



Read the free Automotive Weighing Guide and profit from expert knowledge:

- Discover different weighing applications used in manufacturing automotive parts
- Learn how to improve quality and productivity in production through weighing
- Explore how weighing helps you to comply with industry standards
- Learn about the system integration options provided by METTLER TOLEDO scales.

Get your own free Automotive Weighing Guide now:
www.mt.com/ind-automotive-guide

www.mt.com/ind-manufacturing
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